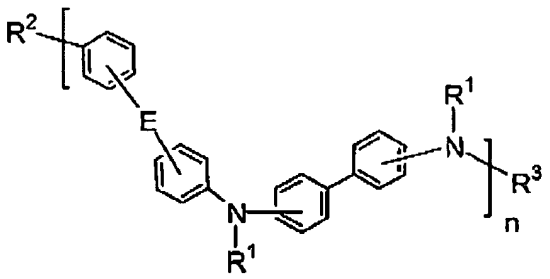
Docket No.: UC0409 US NA
Application No.: 10/782,357
Office Action Dated: May 19, 2006

PATENT

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1 (currently amended). A compound having the formula:



(I)

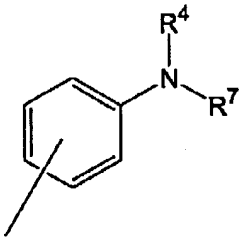
wherein:

n is an integer of at least 1;

R^1 is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms;

R^3 is selected from H and R^1;

R^2 is selected from H, R^1, alkyl, fluoroalkyl, Cl, Br, I and an arylamino group of formula (II),



(II)

wherein R^4 is selected from aryl, H, R^1, alkyl, and fluoroalkyl;

R^7 is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

~~R^5 and R^6 are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy. R^5 and R^6 can, when taken together, form a ring; R^7 is selected from aryl, heteroaryl, fluoroaryl, and~~

~~fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and~~

E is selected from O, S, $(SiR^5R^6)_m$ wherein m is an integer of 1 to 20, $(CR^5R^6)_m$ wherein m is an integer of 1 to 20, and combinations thereof, wherein R^5 and R^6 are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein R^5 and R^6 can, when taken together, form a ~~non-aromatic~~ ring, provided that when E is $(CR^5R^6)_m$, and n is greater than 1 and m is 1, at least one of R^5 and R^6 is not hydrogen or a hydrocarbon.

2 (original). The compound of claim 1, and wherein R^5 and R^6, when taken together, form a non-aromatic ring.

3 (original). The compound of claim 1 wherein n is greater than 1.

4 (original). The compound of claim 2 wherein R^1 is different at each occurrence.

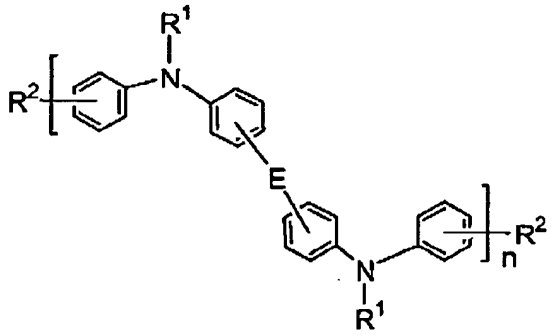
5 (original). The compound of claim 1 wherein R^2 is H.

6 (original). The composition of claim 5 wherein R^3 is aryl.

7 (original). The compound of claim 1 wherein R^1 is selected from phenyl, 1-naphthyl, and 2-naphthyl.

8 (original). The compound of claim 1 wherein n = 1, R^2 is H, and R^3 is selected from phenyl, 1-naphthyl, and 2-naphthyl.

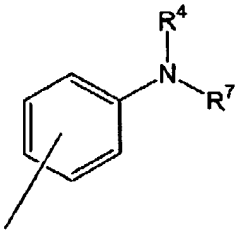
9 (currently amended). A compound of formula (III):



(III)

wherein

n is an integer of at least 1, R^1 is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl; ~~. preferably, R1 is aryl and may be different at each occurrence (i.e. copolymers).~~ R^2 is selected from H, R^1, alkyl, fluoroalkyl, Cl, Br, I and arylamino of formula (II)



(II)

R^4 is selected from aryl, H, R^1, alkyl, fluoroalkyl; R^7 is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

E is selected from O, S, $(SiR^5R^6)_m$ wherein m is an integer of 1 to 20, $(CR^5R^6)_m$ wherein m is an integer of 1 to 20, and combinations thereof, and can be different at each occurrence, wherein R^5 and R^6 are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein R^5 and R^6 can, when taken together, form a ~~non-aromatic~~ ring, provided that when E is $(CR^5R^6)_m$, ~~and n is greater than 1~~ and m is 1, then n is greater than 1 and at least one of R^5 and R^6 is not hydrogen or a hydrocarbon.

10 (original). The compound of claim 9 wherein R^1 is different at each occurrence.

11 (original). The compound of claim 9, wherein R^5 and R^6, when taken together, form a non-aromatic ring.

12 (original). The compound of claim 9 wherein R^2 is H or aryl.

13 (currently amended). The compound of claim 9 wherein R^2 ~~R^3~~ is aryl.

14 (original). The compound of claim 9 wherein R^4 is aryl.

15 (original). The compound of claim 9 wherein R^1 is selected from phenyl, 1-naphthyl, and 2-naphthyl.

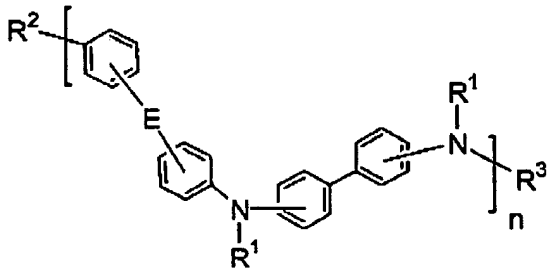
16 (original). The compound of claim 9 wherein n = 1, R^2 is H, and R^3 is selected from phenyl, 1-naphthyl, and 2-naphthyl.

17 (original). The compound of claim 9 wherein at least one aromatic ring in the compound of formula (III) has a substituent selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy.

18 (original). The compound of claim 9 wherein substituents on two neighboring aromatic rings in the compound of formula (III) together form an aromatic or non-aromatic ring.

19 (original). The compound of claim 9 wherein adjacent substituents on at least one aromatic ring together form a fused aromatic or non-aromatic ring.

20 (currently amended). A composition comprising a compound of at least one compound selected from:



(I)

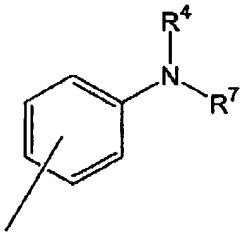
wherein:

n is an integer of at least 1;

R^1 is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms;

R^3 is selected from H and R^1;

R^2 is selected from H, R^1, alkyl, fluoroalkyl, Cl, Br, I and an arylamino group of formula (II),



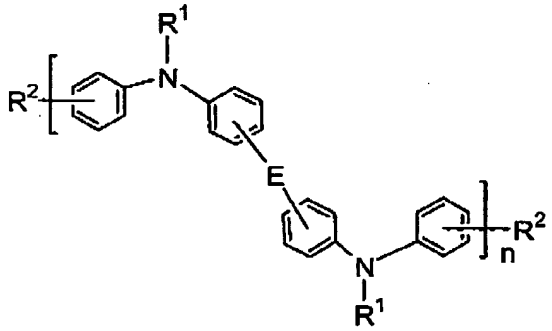
(II)

wherein R^4 is selected from aryl, H, R^1, alkyl, and fluoroalkyl;
R^7 is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

~~R^5 and R^6 are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy. R^5 and R^6 can, when taken together, form a ring; R^7 is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and~~

E is selected from O, S, $(SiR^5R^6)_m$ wherein m is an integer of 1 to 20, $(CR^5R^6)_m$ wherein m is an integer of 1 to 20, and combinations thereof, wherein R^5 and R^6 are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein R^5 and R^6 can, when taken together, form a ~~non-aromatic~~ ring, provided that when E is $(CR^5R^6)_m$, and n is greater than 1 and m is 1, at least one of R^5 and R^6 is not hydrogen or a hydrocarbon.

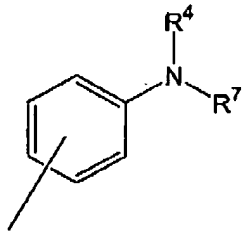
and



(III)

wherein

n is an integer of at least 1, R^1 is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl; ~~--preferably, R1 is aryl and may be different at each occurrence (i.e. copolymers).~~ R^2 is selected from H, R^1, alkyl, fluoroalkyl, Cl, Br, I and arylamino of formula (II)



(II)

R^4 is selected from aryl, H, R^1, alkyl, fluoroalkyl; R^7 is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

E is selected from O, S, $(SiR^5R^6)_m$ wherein m is an integer of 1 to 20, $(CR^5R^6)_m$ wherein m is an integer of 1 to 20, and combinations thereof, and can be different at each occurrence, wherein R^5 and R^6 are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein R^5 and R^6 can, when taken together, form a non-aromatic ring, provided that when E is $(CR^5R^6)_m$, and n is greater than 1 and m is 1, at least one of R^5 and R^6 is not hydrogen or a hydrocarbon.

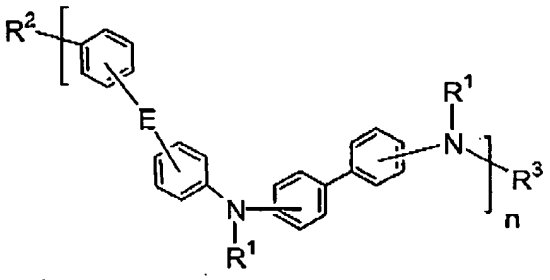
21 (original). An electronic device comprising at least one layer comprising at least one compound selected from the compounds of Claim 1 or Claim 9.

22 (original). The device of Claim 21, wherein the layer is a charge transport layer.

23 (original). The device of Claim 21, wherein the layer is a light-emitting layer.

24 (currently amended). A process for producing a polymer, comprising:

(a) providing two or more compounds having the formulae (I) or (III):



(I)

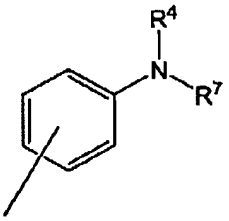
wherein:

n is an integer of at least 1;

R^1 is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms;

R^3 is selected from H and R^1;

R^2 is selected from H, R^1, alkyl, fluoroalkyl, Cl, Br, I and an arylamino group of formula (II),



(II)

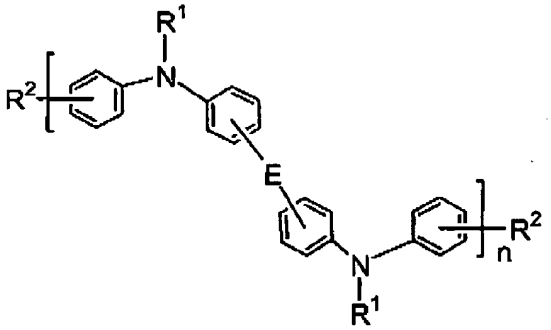
wherein R^4 is selected from aryl, H, R^1, alkyl, and fluoroalkyl; R^7 is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

~~R^5 and R^6 are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy. R^5 and R^6 can, when taken together, form a ring; R^7 is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and~~

E is selected from O, S, $(SiR^5R^6)_m$ wherein m is an integer of 1 to 20, $(CR^5R^6)_m$ wherein m is an integer of 1 to 20, and combinations thereof, wherein R^5

and R^6 are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein R^5 and R^6 can, when taken together, form a non-aromatic ring, provided that when E is $(CR^5R^6)_m$, and n is greater than 1 and m is 1, at least one of R^5 and R^6 is not hydrogen or a hydrocarbon

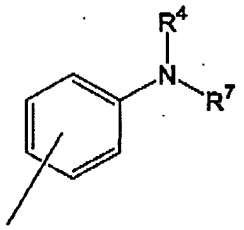
or



(III)

wherein

n is an integer of at least 1, R^1 is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl~~. preferably, R1 is aryl~~ and may be different at each occurrence; ~~(i.e. copolymers).~~ R^2 is selected from H, R^1, alkyl, fluoroalkyl, Cl, Br, I and arylamino of formula (II)



(II)

R^4 is selected from aryl, H, R^1, alkyl, fluoroalkyl; R^7 is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

E is selected from O, S, $(SiR^5R^6)_m$ wherein m is an integer of 1 to 20, $(CR^5R^6)_m$ wherein m is an integer of 1 to 20, and combinations thereof, and can be different at each occurrence, wherein R^5 and R^6 are each independently selected

from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein R^5 and R^6 can, when taken together, form a non-aromatic ring, provided that when E is $(CR^5R^5)_m$, and n is greater than 1 and m is 1, at least one of R^5 and R^6 is not hydrogen or a hydrocarbon.

(b) reacting said compounds in the presence of a copper, nickel, or palladium catalyst while maintaining said compounds at a temperature of 22°C to 150°C for 24 to 92 hours, to form a first polymer;

(c) treating said polymer with an endcapping group to form a capped polymer; and

(d) further reacting said capped polymer for 24 to 48 hours to produce said polymer.

25 (original). The device of Claim 21, wherein the device is selected from a light-emitting diode, a light-emitting diode display, a laser diode, a photodetector, photoconductive cell, photoresistor, photoswitch, phototransistor, phototube, IR-detector, photovoltaic device, solar cell, transistor or diode.